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## Measurement of fundamental ion beam – matter interaction parameters for heavy ion nuclear analytical techniques

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The use of heavy ion beams ( $Z > 2$ ) in ion beam materials analysis (IBA) techniques has been shown to enhance the sensitivity of these techniques when compared to using light ions (H, He). The development of theoretical models to describe various ion beam-matter interaction phenomena for use in IBA analytical software is strongly dependent on the availability of experimental data to test these models. One of the factors inhibiting widespread implementation of heavy ion IBA techniques is the scarcity of experimental data of basic parameters such as stopping force and X-ray production cross sections. This contribution describes measurements carried out to determine heavy ion induced X-ray production cross sections and stopping force in solid matter for applications in Heavy Ion ERDA and Heavy Ion PIXE. Stopping force data is compared to predictions by the ab initio CasP code and the semi-empirical SRIM, and X-ray production cross section measurement results are compared to the plane wave Born approximation (PWBA) and ECPSSR-UA calculations.

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